

# Respiratory Viral Infection Surveillance in Pediatric Hematopoietic Stem Cell Transplant Recipients

Lubna Hamdan<sup>1</sup>, Flor M. Munoz<sup>2</sup>, Lara Danziger-Isakov<sup>3</sup>, Jennifer Schuster<sup>4</sup>, Susan Coffin<sup>5</sup>, Janet Englund<sup>6</sup>, Monica I. Ardura<sup>7</sup>, Rachel Wattier<sup>8</sup>, Gabriela Maron<sup>9</sup>, Pediatric HSCT Flu Network, and Natasha Halasa<sup>1</sup> **VANDERBILT UNIVERSITY**

<sup>1</sup>Vanderbilt University Medical Center, <sup>2</sup>Baylor School of Medicine, Texas Children's Hospital, <sup>3</sup>Cincinnati Children's Hospital, <sup>4</sup>Children's Mercy Hospital, <sup>5</sup>Children's Hospital of Philadelphia (CHOP), <sup>6</sup>Seattle Children's Hospital, <sup>7</sup>Nationwide Children's Hospital, <sup>8</sup>UCSF (University of California San Francisco) Benioff Children's Hospital, San Francisco, <sup>9</sup>St. Jude Children's Research Hospital

**MEDICAL CENTER**

## 1. Background

Influenza (flu) is associated with severe morbidity and mortality among hematopoietic stem cell transplant (HSCT) recipients. We performed respiratory viral infection surveillance in pediatric HSCT recipients during an ongoing flu vaccine trial since September 2016.

## 2. Objectives

To describe the respiratory viral frequency detection in our cohort who participated in year three of the vaccine study.

## 3. Methods

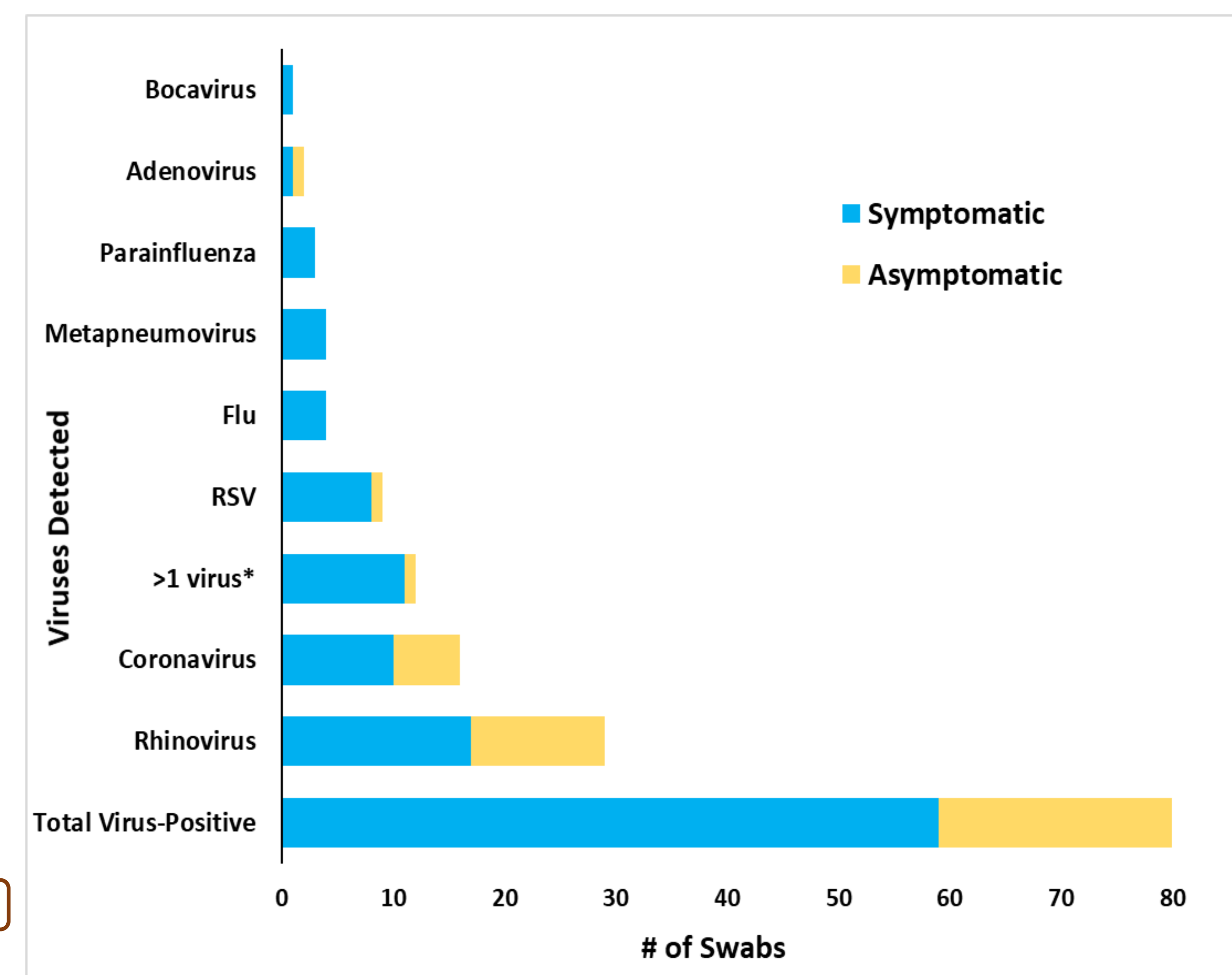
- Pediatric HSCT recipients aged 3-18 years.
- Phase-II, nine-center, randomized-controlled, double-blinded immunogenicity/safety clinical trial comparing two doses of either high-dose trivalent inactivated flu vaccine or standard dose quadrivalent inactivated flu vaccine over three years (2016-2019).
- Active flu surveillance was conducted during site-specific flu seasons and mid-turbinate nasal swabs were collected based on influenza-like illness (ILI); If study visits occurred during flu season, swabs were collected regardless of symptoms.
- In study year three only, swabs were also collected for ILI outside flu-season.
- Specimens were tested for 20 targets using the Luminex NxTAG Respiratory Pathogen Panel<sup>®</sup>.
- Testing results for swabs collected from subjects enrolled during year three of the vaccine study (9/2018 to 10/2019) were included in this analysis.
- The study is ongoing and remains blinded to vaccine type.

## 4. Results

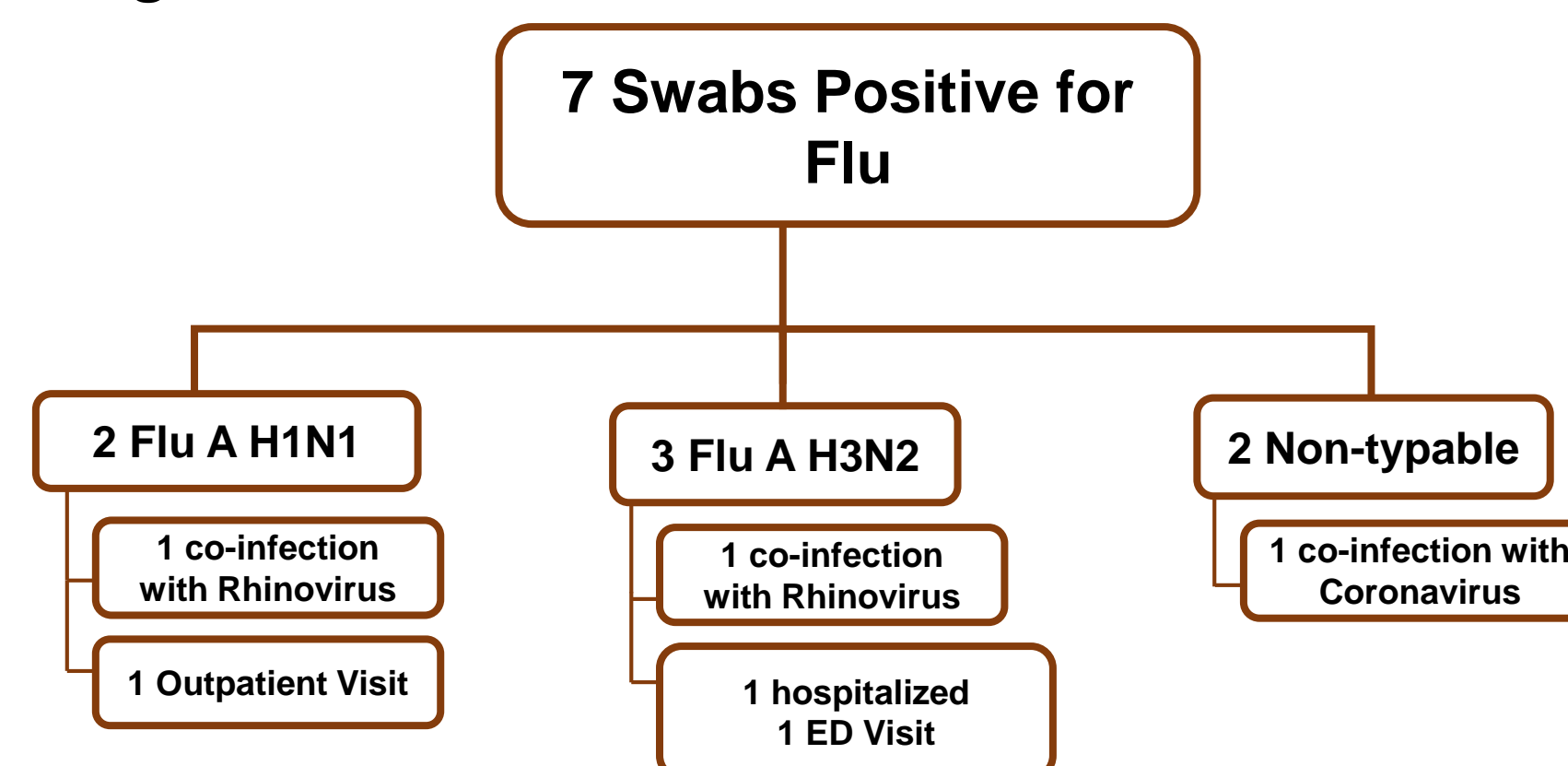
**Table 1. Demographics of Study Population**

Total Subjects	N=91 (%)
Male	50 (55)
Race	
White	58 (64)
Black	21 (23)
Median age, years [Range]	11.3 [3.1-18.9]
Median time from transplant, months [Range]	9.3 [3-35.3]
Subjects with ≥1 swab collected	74 (81)
Reason for Transplant: Malignant Disease	50 (55)

**Figure 1. Viruses Detected in Swabs Collected from Symptomatic vs. Asymptomatic Subjects**



**Figure 2. Flu Positive Swabs**



## 5. Conclusions

- Breakthrough flu was detected in 7% of the pediatric HSCT recipients in our cohort despite flu vaccination
- All flu subjects were symptomatic, but most cases were mild.
- Detection of non-flu viruses in asymptomatic HSCT flu vaccine recipients warrants further investigation to ascertain clinical significance.

Pediatric HSCT Flu Network: Zaid Haddadin<sup>1</sup>, Rendie McHenry<sup>1</sup>, Erin Yepsen<sup>1</sup>, Einas Batarseh<sup>1</sup>, Laura S. Stewart<sup>1</sup>, Daniel Dulek<sup>1</sup>, Herdi Rahman<sup>1</sup>, Carrie L. Kitko<sup>1</sup>, Maggie Morrison Jones<sup>1</sup>, Claire E. Bocchini<sup>2</sup>, Elizabeth A. Moulton<sup>2</sup>, Christopher Williams<sup>2</sup>, Samantha Blum<sup>3</sup>, Michael Grimley<sup>3</sup>, Grant Paulsen<sup>3</sup>, Christopher J. Harrison<sup>4</sup>, Rakesh Goyal<sup>4</sup>, Jason Freedman<sup>5</sup>, Kim Allison<sup>9</sup>.